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496 [499] The technical skill of Bulgaria in railroad construction stands at a very high level. It does justice and honor to the country's efforts. The railroads are studied and built by Bulgarian railroad engineers and railroad building companies or by the State. As interesting examples of railroad construction, we might point the Trans-Balkan railroad (Fig. 28), as well as the outstanding interesting development of the Rhodope railroad, which runs from the Maritsa valley to the valley of Mesta and the Southern Bulgarian border (Fig. 29).

Unfortunately, Bulgarian railway lines stop short of the Aegean coast at a very close distance to it (Appendix II). The major line from Roussé on the Danube to south of Momchilgrad, which is 414 kilometers long, stopped 30 kilometers short of the Greek frontier and 30 kilometers from there to the Aegean Sea.

How do Bulgarian railways stand as compared to the railways in her neighbouring countries?

States	*Years*	*Railroads kilometers*	*Territory sq. km.*	*Railways per 1000. km. of territory km.*
Bulgaria	1937	3.105	103	34.—
Greece	1935/6	2.650	130	20.4
Yougoslavia	1935	9.471	248	38.2
Romania	1936	11.216	295	38.2

Romania had 4.357 kilometers of railways until 1918. Then she added the Austro-Hungarian railways to make them 11.678 kilometers. In this way, she increased the density of her railway network and acquired the advantage of a modern system of communications. Similarly, Yugosla.ia acquired the biggest part of her railroads as a result of the dissolution of the Austro-Hungarian Empire. Serbia had only 1.600 kilometers of railroads for a territory of 48.303 sq. km., or 43 km. of railroads per a 1000 sq. km. of territory until 1914. It is evident, therefore, that, compared to the other Balkan countries, Bulgaria has relied on her own efforts and has exerted herself most of all of them for the development of her railway communications.

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the remotest corners of the land at a very cheap rate, ranging from 0.5 to 1.0 leva per kilowatt hour. This plan is being revised now and it is anticipated that the enlarged project would absorb an expenditure of 20 billion leva. The consumption of electric energy then would be distributed as follows:

For inhabited localities	28.3 %
For agriculture, including irrigation but without azotic fertilizers	13.—%
For transportation	8.9 %
For industries	45.4 %
and for other purposes	4.3 %
	100.—%

What has been said before about motor-car communications and roads may be supplemented by the following figures; for the 10 year period from 1932 to 1941 Bulgaria has built 4.568 km. of new roads, 15.736 km of levelling and new road bedding, 17.565 km. of new bridges and drainage works. This meant a total expenditure of 4,150,540,490 leva or about 550,000,000 leva per year. For the same period we have 615 km. of new railway lines at an expenditure of 1,620,000,000 leva.

We will not dwell on the question of dams and irrigation, but will only mention the completed big dam on the river Iskar in the Rila Mountain, with a capacity of 15.000.000 cubic meters of water which is 50 meters high and will note that Bulgaria has spent, during the most trying period of life (1939 — 1941). for:

drainage works	42.750.490.—	leva
stream corrections	22.521.837.—	leva
irrigation	9 469.815.—	leva or a
total of	74.742.142.—	leva.

This was not the end of Bulgaria's efforts. Bulgaria was anxious to take care of the countries which were provisionally under her administration during the last war. Here is some information taken from a controversy on the subject.

A Greek paper discussing the subject of homes and other buildings built by the Bulgarian authorities in the Aegean Coast Region, writes among other things the following:

„If we overlook the public bath at Xanthi built by them for the pleasure and enjoyment of their brothers the Germans,

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497 not justified. By the year 1931-2 the number of stations had increased by 30%, plus another 195 small stations, or halting places and though the milage had also augmented, nevertheless the staff numbered 16,602, so that M. Yaranov's criticism seems to have been well-founded so far as the year 1927-8 is concerned, this may be said also of his remarks about the stopping places being too numerous and involving a tremendous waste of energy to the trains having to pull up and start at very brief intervals.

• 499 653 Owing to the lack of funds, special measures had to be devised in order to provide the requisite means for the construction of the new railway lines. Thus a special tax was imposed on the inhabitants of communes through which new railway lines were laid and municipalities had to expropriate land and provide labour at their own cost. The compulsory labour service was utilised, and it may be said that without the help of this institution little of what was done would have been accomplished.

An idea of the cost of the new lines and of the repartition of the expenses may be formed by studying the data relative to the Plovdiv-Panagurishte line of 70·880 klm. in length, which cost a total of 117,458,474 leva, or 1,640,010 leva per klm. Eventually it is proposed to join up this line with the projected trunk line Sofia-Pirdop-Kazanlik-Sliven-Burgaz, parts of which have already been built.

20,937,003	leva	Work furnished by temporary labour conscripts (defrayed by communes)
14,668,896	„	Work furnished by regular labour conscripts (defrayed by the State)
2,120,985	„	Land and building expropriated by the communes
1,543,525	„	Sum provided by the State budget
556,910	„	„ „ „ „ „ extra-ordinary budget.
39,123,615	„	Sum provided from the Railway special construction Fund (Amounting to 408 millions in 1932.
10,000,000	„	Sum provided from the Railway special Fund for embelishments and Station installations (Amounting to 221 millions in 1932)

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20,820,000 leva value of materials furnished by the State Railways
7,687,550 „ Various

499●
653

The average cost seems to range between $1^1/_2$ and 2 million leva per klm. Thus the line Plovdiv-Karlovo, 77·530 klm. in length cost 152 millions or slightly under 2 million leva per klm., while the line Levski-Lovets cost only $1^1/_2$ millions per klm. It may be added that it took 12 years to complete the building of the line Plovdiv-Panagurishte and this tardiness is due to the fact that instead of concentrating all efforts on one or two lines, some 21 lines were being constructed simultaneously. This was anything but a sensible plan, in view of the utterly inadequate means at the disposal of the railway administration. In many instances earthworks which had been completed were washed away and had to be constructed anew before the ballast, sleepers and rails could be laid.

The general plan of construction of railways was set forth in a Bill passed by the Sobranye on May 9, 1925 and provided for the construction of the following lines:

Normal gauge

1. Rakovski—Haskovo—Mastanli
2. Radomir—Gorna-Djuma—Simitli
3. Yambol—Elhovo
4. Lovets—Levski
5. Dabovo—Sliven
6. Plovdiv—Karlovo (with branch to Hissar)
7. G. Orehovitsa—Elena
8. Sofia, circular
9. Kritsim—Pestera
10. Sofia—D. Kamartsi—Pirdop
11. Plovdiv—Panagurishte,

Narrow 76 cm. gauge

12. Tatar Pazardjik,—Ledjene—Nevrokop
13. Bela Slatina - Orehovo
14. Preslav—Verbitsa
15. Tserven Breg—Lukovit—Teteven
16. Burgaz—Anhiallo.

•499 653 On the completion of these lines, the bill provided for a further plan of construction which comprised the laying of lines between:

17. Simitli—Petrich
18. Rakovski—Mihailovo
19. Shumen—Smedovo—Karnobat
20. D. Kamartsi—Orhanie—Yablanitsa—Sevlievo—Tirnovo - Osman-Pazar—Eski Djuma
21. Orhanie—Mezdra
22. Levski—Trembesh
23. Kostenetz Bania—Samokov—Dubnitsa- Bobov Dol
24. Stanimaka -Tsepelare—Pashmakli
25. Popovo—Razgad—Kemanlar
26. Batanovtsi - Breznik—Tren
27. Boitsinovtsi—Glozene- Kozlodyi
28. Vidin—Kula
29. Pirdop - Karlovo—Kazanlik
30. Zimnitsa—Kotel
31. Somovit—Nikopol
32. Pleven—Lovets
33. Lovets—Trojan (eventually to be prolonged southwards to Karlovo
34. Kirdjali - Ortakey
35. Drenovets—Belogradchik - Stakevski
36. Dolen Tsiflik—Staro Orehovo
37. Zlaten Dol—Kavakli - Elhovo—Burgaz.

Narrow 76 cm. gauge

38. Anhialo Mesembria
39. Malko Tirnovo—Vasiliko
40. Razlog - Simitli.

Of the above programme, lines, 1, 3, 4, 5, 6, 11, 13, 16, have been completed, while work on lines 2, 7, 8, 9, 10, 12, 14, 15, 19, 25, 29, 21, 33, and 36 has been started and is being continued but at a very slow pace. Owing to the extremely difficult position of the Exchequer only 17,050,000 leva were provided in the 1934 budget for railway construction, and it had been decided that work should be concentrated on the completion of the Radomir-Dupnitza-G. Djuma, Mihailovo-Rakovski, Sofia circular line,

and the 76 cm, narrow gauge railway Tatar-Pazardjik-Yakoruda-Nevrokop. The Mihailovo-Rakovski line is likely to prove of some importance for international traffic, as it is proposed to organise a service of through trains running from Poland by way of Rumania via Rustchuk-Tirnovo-St.-Zagora to Constantinople, which will necessarily borrow this connecting link, shortening, very perceptibly the distance St.-Zagora-Constantinople by avoiding the long loop round Plovdiv. 499 ● 653

The technical committee of the railways has made certain alterations in the original construction plan of 1925 and these modifications have been set forth in a protocol dated January 1929. Thus line № 20 is to be deflected in its eastward part more to the south, avoiding Osman Pazar and Eski-Djuma, in order to pass through Zlataritsa — Elena — Titsa and join the line № 14 Verbitsa - Preslav, which will be constructed as a normal gauge line instead of as a 76 cm, narrow gauge line, as originally projected. It is surprising that this scheme has not been a little further modified so that Sevlievo might be joined to Gabrovo and the already existing railway line Gabrovo—Drenovo—Tirnovo utilised, instead of leaving Gabrovo as a terminus of a blind-alley railway line despite the industrial importance of this town. Another decision taken was that of modifying line 38, (Anhiallo — Messembria) to a normal gauge, though the construction of this particular line seems utterly purposeless, there being no traffic to justify such expenditure, besides the fact that both termini are ports and that communications between them are always available by boat or by road vehicles.

There are about 19 lines of an approximate legth of 790 klm. on which work has been started; they are estimated to cost about 1,450 millions, there being some 9.750 klm. of tunnels to be bored. But in order to complete the programme which has been set forth some 210

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• 499 653 klm more have to be constructed, necessitating a further outlay of 1684 millions, for in this section the length of tunnels is estimated at 20.900 klm. These 30.650 klm. of tunnels will require some 1150 millions for their completion. The money can not be provided out of local resources, and since the new lines which are now being constructed can only be exploited sectionally and therefore uneconomically, so long as the whole programme of construction is not completed it would be judicious to seek outside help instead of exploiting for a series of years various unconnected branch lines at a clear loss. With the existing competition of motor vehicles it seems now senseless to run trains on small branch lines of 30 or 40 klm in length; which will eventually be joined up to form a big trunk line. So long as they are worked in sections they cannot attract much traffic and are unable to cover expenses, while if they were to be joined up, they could be exploited more rationally and made to pay, besides contributing to the development of the region they traverse. As an instance, lines 10 and 29 may be cited. They are planned to link up and be joined to the existing branch line Kazanlik—Tulovo which has been connected with the newly constructed branch line № 5 (Dubovo—Sliven) already extended to Zimnitsa, a station on the railway line St. Zagora—Burgas On this proposed trunk line between Sofia and Burgas there are already three sections which are being axploited, namely the ones between Sofia and Makotsevo,[1] Kazanlik and Tulovo, and Dubovo and Sliven. Several complete trains are being daily run on them, apparently at a loss, for most often the passengers using them may be counted on one's fingers, For on such short distances trains are always at a disadvantage as compared with motor vehicles, which,

[1] The unfinished section Makotsevo—Kazanlik is estimated to cost about 800 million leva.

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as everywhere else are proving formidable rivals to the railways. The line Kazanlik - Tulovo is hardly utilised by passengers proceeding or returning to and from Kazanlik—St. Zagora. They prefer to drive by motor car, the journey by road vehicle being more rapid and cheaper. Most of these short branch lines can serve no useful purpose and they will always be a financial burden to the railway system If so many short branch lines figure in the proposed programme of construction this should be attributed to the influences exerted by certain politicians, who always wish to gain popularity in a certain district by securing the construction of a railway line through it, without regard as to whether its construction will be profitable or not to the State. It would be by far more rational not to undertake the construction of such lines as Nos 9, 22, 26, 27,28, 30, 34, 35, 36, 38 and 39 and instead build good roads, it would be equally sensible too to suspend the running of complete trains on such short distances as Kazanlik—Tulovo, Sofia—Bankia, Lovets—Levski etc,, and replace them by light steam-driven units, or motor rail-cars which are practically omnibuses mounted on railway wheels[1]. It would thus be possible to have both a frequent and a speedy service, advantages now possessed by the road vehicles which are competing the railways most successfully on all short distance lines.

The railway system according to M. Ivan Dorossiev's "Financial Studies on the Bulgarian State railways," seems to suffer from another serious disability, that of being very carelessly constructed. In order to reduce the initial outlay, all technical work which could be dispensed with was avoided, with the result that there are too many gradients,

[1] Four such railcars have been ordered on a compensation basis, and ten more will be provided for in the 1935 budget. The railway administration considers that it needs at least thirty more.

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rendering the working of the line more costly than it need have been. According to the data furnished by this author, of the 2,205 km. existing in 1919, 26.30 % were level, 46 % with gradients varying between 1 and 10 per % and 27.6 % with gradients over 10 per %. The existence of so many steep gradients of more than 10 % in the net work is surprising, for even in Switzerland, the most mountainous country in Europe, the percentage of such gradients was only 20.4 % as compared with 27.6 % in Bulgaria, while in Rumania the percentage is only 7.2 %. The part of the network which has mainly contributed to increase this disadvantage is the section Tirnovo-St. Zagora which traverses the Balkans and which if it had been more carefully built could have proved of great value to the country since it could then have been utilised as an international trunk line, a function which in its present state it can not fulfil economically, as regards goods traffic, but can only compete for the carriage of passengers, and for the lighter and more valuable class of goods [1]

The history of this line is worth repeating as it illustrates to what extent politicians made light of their country's welfare and to what subterfuges and trickery they would have recourse to in order to further their own interests. The technical staff of the railway administration was utterly opposed to the construction of this trans-Balkan line in its present form. Their plan was to lay the line further east along the Haim Bogaz Pass, and this view was championed by the then Minister of Communications, M. Gatev, who was the only honest man in a cabinet composed of crooks, and presided over by an, arch-cynic Prime Minister, the late D. Petkov. The latter

[1] Deputy D. Neikov stated on June 28, 1928 in the Sobranye: „This line was constructed against the advice of the most competent technicians, it has gradients of 30%, and its upkeep and utilisation cause an excessive outlay to the railway administration".

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and some of his supporters, among whom Minister Ghenadiev and deputy St. Popov of Trevna, being interested in some coal mine concessions in the Trevna district, wished that the intended railway should be deflected from the projected course which the technical staff had recommended so as to traverse the region where the mines were located, thus enabling them to dispose very advantageously of their concessions. As the change in the original plan would have impaired the carrying capacity of the line, and would have increased considerably the cost of construction, M. Gatev resolutely opposed the idea, and refused to yield on the point. In order to overcome his obstruction, Petkov hit on the expedient of sending him on a mission abroad and temporarily took charge of the Ministry of Railways. No sooner had M. Gatev departed, than Petkov submitted a Bill for the construction of the railway, with the desired modification and had the Bill carried post-haste by his subservient supporters or „boys" as they were familiarly termed by him. M. Gatev, as was to be expected of him, resigned as soon as he became acquainted with the trick which had been played on him, but Petkov remained nonplussed by the public disavowal inflicted on him by his colleague. He was wont to meet such happenings with such cynical outbursts: „I am so full of blots that a fresh stain will not show".

At any rate he was not the only Minister to line his pockets out of the railways. His immediate successors in 1909 seem to have done remarkably well out of them. Dr. Sakarov, who until lately was the manager of the Agricultural Bank, wrote in a booklet in which he criticised the doings of the Democratic party, that while one of their leaders declared in the Sobranye on December, 15, 1908, that the railway net exploited by the Oriental Railway Company in Southern Bulgaria was not worth more than 19,135,923 gold francs; this party which was

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499 661 again in power in 1909 paid as much as 42 millions for them, and that the person who supported this measure with the greatest warmth was Liaptchev. It would seem that his advocacy brought him a net gain o two millions, according to the testimony of M. Sakarov, who cites Minister Pechev's „Memoirs" in support. Obviously there was a margin of some 22 millions between the real value of the lines and what was paid tor them, and there must have been others who shared M. Liaptchev's good fortune. That the price paid was outrageously high is self-evident since in 1898 the company had agreed to cede the whole network for 24,850,863 gold francs, but the transaction fell through owing to the inability of the then Government to conclude a loan. This was not the only occasion on which the railways provided for the staging of shady affairs.

The Finance Minister in the Stoilov Cabinet (1894—1899) thought it would be a clever expedient to construct parallel lines to those exploited by the Oriental Railway Company, and thereby force it to sell out at a low price. Apparently this financial genius was not at all perturbed by the expenditure which the construction of the parallel lines would entail, for the scheme was to serve as a pretence to enrich his political friends. Judging from the discussions which followed in the Sobranye at the time, it would appear that several partisans of the Government had bought up land along the proposed lines and expected to make a very substantial profit by ceding it to the State. The proposal was carried through in spite of the protests of one of the Ministers, M. C. Velitchkov, who resigned. A legacy of this ill-considered policy is the line running north of the Maritsa, from Plovdiv to Tsirpan and Nova Zagora. Fortunately the section Plovdiv—Tatar Pazardjik was not built, but if this wild cat scheme was not proceeded with further, it is not their politicians the Bulgarian people have to thank but rather the foreign capitalists who would not

furnish the means wherewith it could be carried out. Which shows that all financiers will not play the part of Mephistopheles to the Bulgarian Faust by tempting him with endless loans, as has happened quite recently and as holders of League of Nations' Loans have learnt to their loss. This whimsical scheme caused the fall of the Stoilov Cabinet in 1899 and was mainly brought about by the intervention of Ferdinand who overtly accused his Finance Minister of realising seven million leva out of these dubious transactions. It must not be thought that Ferdinand was prompted in this act by a desire to safeguard from dilapidation the public purse. He must have certainly been coaxed on by the avidity of the Minister in question who probably wished to keep most of these seven millions for himself.

With regard to inter-Balkan communications, it may be said that all the palaver of the Balkan conferences has not led to any practical decision. The Bulgarian proposal for the construction of a bridge across the Danube at Rustchuk, to link up the Bulgarian and Rumanian railway system, has been repeatedly rejected by the Rumanians and it was only at the end of 1934 that they made a slight concession by acquiescing to the plying of a ferryboat between Rustchuk and Giurgiu. As navigation on the Danube is suspended during the winter and the level of the river varies very considerably when in spate, the utilisation of the ferry boat will only be possible for a few months in the year, and the advantages to be derived proportionately restricted. The Greeks too have not responded to the Bulgarian suggestion of linking up their railways through the valley of the Struma, though the Bulgarians are pushing on with the construction of a broad gauge railway which will shortly reach Gorna Djuma. The extension of this line to the Greek frontier is estimated as likely to cost 328.7 million leva. It is only the Yugoslav Government

499 648 which has shown more consideraton to Bulgarian requirements and has agreed to join up its railways at two other points besides Tsaribrod, namely at Vidin and at Giushevo, the present terminus of the Sofia-Kustendil line which will be prolonged to Kumanovo. When the construction of this line will be achieved, the present railway journey Sofia — Salonica will be shortened by a third of its present duration by the avoidance of the long way round through Nisch.

Roads

491 652 The total length of semi-permanent or macadamised roads in Bulgaria in 1934, was of 17071 klm. and there were another 7,125 klm. in construction. Of the existing milage, 8,397 klm. were reported to be in good condition, 4,991 klm. in medium condition, and 4,103 as in a bad condition. The new Government planned to construct another 4000 klm. of roads and contemplates spending a sum of two milliard leva on this project, completing every year some 400 klm. of new roads. It has created new taxes in order to provide the necessary funds, among which is a special road tax of 140 leva a year to be levied on all males between the ages of 20 and 55. Owners of motor cars will also contribute to the maintenance of the roads by paying increased sums for their driving licences. It is expected that some 300 million leva will be raised annually by these special taxes, ⅔ of which are proposed to be spent on the building of the new roads and ⅓ for the upkeep of those already existing.

499 It is proposed to construct at once an arterial road of 300 klm. between Sofia and Orhanie, trying different systems and materials in order to find out which is the most suitable for local conditions. It is aimed to have the new roads laid out properly, in order that they may not need repairing for the first ten years. The compulsory

labour service will be utilised in the building of the new roads all of which will be 9, 8, or 7 m. wide, according to their importance, and with trees planted along their entire course. 499

The road milage was reported to be 17,238 klm. by deputy I, Vultchev in the Sobranye on June 7, 1932, and he added that it would be necessary to construct some 70,000 klm. of roads in order to connect all villages with one another. The average expenditure for the upkeep of roads was about eighty million leva a year and this was inadequate. He estimated the cost of construction at one million leva per kilometre in mountainous country and at 600,000 in level country. This does not seem to be an excessive estimate since M. At. Yaranov in his book "Bulgaria to-day and to-morrow", assesses the cost per kilometre of a good road fit for motor traffic at 1,500,000 to 2,000,000 leva and that of an ordinary one at 1.000,000 leva per kilometre which is about as much as the cost of a railway line in Bulgaria. It would appear from the figures cited that the Government contemplates halving the cost of the roads it proposes to construct by utilising largely the compulary labour service.